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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,322	08/02/2005	Gordon Cook	4140-0111PUS1	9223
2292 7590 06/03/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER RIVELL, JOEIN A				
ART UNIT 3753		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

# Office Action Summary

**Application No.**

10/511,322

**Applicant(s)**

COOK ET AL.

**Examiner**

JOHN RIVELL

**Art Unit**

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/2/09 (RCE).  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-21 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1 and 3-21 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/CDC)  
4) ☐ Interview Summary (PTO-413)  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date \_\_\_\_\_

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 2, 2009 has been entered.

Claim 2 has been canceled. New claims 12-21 have been added and entered. Thus claims 1 and 3-21 are pending.

Claim 1 is objected to because of the following informalities: In lines 5-6, the recitation "the flexible tube" should read -- the flexible conduit-- (see lines 3-4). Also in line 12, the recitation "the flexible valve seal closure..." should read -- the valve seal closure...--. Appropriate correction is required.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 20, which is currently dependent on claim 17, which depends on claim 15 which depends on independent claim 14, adds to the scope of the previous claim(s) the

feature that "the valve seal is formed between the outer wall of the flexible conduit for fluid flow between the inlet and outlet ports and an abutting protuberance in a passageway for fluid flow in the valve body between the inlet and outlet ports". Such a feature is clearly explicit in the embodiment of instant figure 2 for example.

Claim 15, which is also in the chain of dependency, added to the scope of the previous claim the feature that "the conduit is surrounded by an annular space in communication with the control port to provide said pressure differential across the walls of a conduit as between fluid flow in the conduit and fluid supplied to the annular space". This feature of claim 15 appears to be explicit in the embodiment of instant figure 1.

Thus the scope of claim 20 embodies an invention in which the (flexible) conduit is surrounded by an annular space connected to the control port (the embodiment of instant fig. 1) and the flexible conduit wall forms a seal with a seat formed by an abutting protuberance (the embodiment of instant fig. 2).

The scope of the disclosure as originally filed fails to provide an adequate written description of the invention as is now claimed in claim 20. That is, the application as originally filed does not provide an adequate written description of an invention in which features of one embodiment are mixed with features of another different embodiment. As such claim 20 now contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15, 16, 18, 21/15, 21/17, 21/18 and 21/19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "the conduit" in line 1. There is insufficient antecedent basis for this limitation in the claim nor is there sufficient antecedent basis in claim 14 from which claim 15 depends. For the purposes of the rejection below, this limitation will be taken to mean the flexible valve closure element.

Claim 16 recited the limitation "the annular space" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. For the purpose of the rejection below, this limitation is taken to mean the pressurized space actuating the valve.

Claim 18 recites the limitation "the flexible conduit" in line 2. There is insufficient antecedent basis for this limitation in the claim nor is there sufficient antecedent basis in claims 17, 15 and 14 from which claim 18 depends. For the purposes of the rejection below, this limitation will be taken to mean the flexible valve closure element.

Claim 21, as appropriately dependent, is included here because of dependency at this time.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 10, 11, 14 and 15 are rejected under 35 U.S.C. §102 (b) as being anticipated by Korn (U. S. Pat. No. 2,470,744).

The patent to Korn discloses several identical valves at sections 20 and 22 connected in series. The valve at the inlet section at 20 in figure 1 is a "valve for controlling fluid flow (the transfer of solid particles in Korn is accomplished by the attendant flow of a column of air or other gas. Thus the valve controls the flow of fluid as well as the flow of solids) in a main fluid flow path (from inlet flange 23 to outlet flange 25), comprising: a valve body (section 20) having an inlet (within flange 23) and outlet port (within flange 35) for fluid flow from a fluid pressure source and a flexible conduit (32) which extends along a greater portion of an extended length path (between flanges 23, 25), wherein the flexible tube (32) also forms a valve seal closure member constrained to engage a non-porous valve seat (at rings 46, 48) which extends along only a minor portion of the extended length of the extended length path (from inlet flange 23 to outlet flange 25) in the closed position of the valve; a control port (34) in the valve body (section 20) for providing a control fluid acting to maintain the flexible valve seal closure member (32) in the closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible valve seal closure member (32) off the valve seat (46, 48), and that applied on the other side of the flexible valve seal closure member (32) through said control port (34) to close the valve; and control means (inherent in the fluid circuit connected to conduit 34) for varying said differential

pressure to control movements of the flexible valve closure member (32) and regulate fluid flow through the valve" as recited in claim 1.

Regarding claim 5, in Korn "the conduit (flexible member 32) is surrounded by an annular space (33) in communication with the control port (34) to provide a pressure differential across the walls of the conduit (32) as between fluid flow in the conduit and fluid supplied to the annular space (33)" as recited.

Regarding claim 10, in Korn, "said valve seal (at seat rings 46, 48) is formed between an inner wall of the flexible conduit (32) acting as said valve seal closure member for fluid flow between the inlet and outlet ports, and the valve seat (46, 48) is mounted within the conduit (32) to engage said inner wall of the flexible conduit (32) in the closed position of the valve as recited.

Regarding claim 11, the patent to Korn discloses a "valve for controlling fluid flow comprising: a valve body (section 20) having an inlet and outlet port for fluid flow from a fluid pressure source; a substantially non-porous valve seat (rings 46, 48) mounted between the inlet and outlet ports, the substantially non-porous valve seat (46, 48) having a flexible valve closure member (32) constrained to engage only the a substantially non-porous valve seat (46, 48) in the closed position of the valve; a control port (34) in the valve body (20) for providing a control fluid acting to maintain the flexible valve closure member (32) in the closed position under a pressure differential as between that applied to one side of the flexible closure member (32) by said fluid flow through the inlet port acting to lift the flexible closure member (32) off the valve seat (46, 48), and that applied on the other side of the flexible closure member (32) through said

control port (34) to close the valve; and control means (inherent in the fluid circuit connected to conduit 34) for varying said differential pressure to control movements of the flexible valve closure member (32) and regulate fluid flow through the valve" as recited.

Regarding claim 14, the patent to Korn discloses a "valve for controlling fluid flow comprising a valve body (20) having an inlet and an outlet port for fluid flow from a fluid pressure source, a valve seal mounted between the inlet and outlet ports, the valve seal having a valve closure member (32) constrained to engage a valve seat (rings 46, 48) in the closed position of the valve, a control port (34) in the valve body (20) for providing a control fluid acting to maintain the valve closure member (32) in the closed position under a pressure differential as between that applied to one side of the closure member (32) by said fluid flow through the inlet port acting to lift the closure member (32) off the valve seat (46,48), and that applied on the other side of the closure member (32) through said control port (34) to close the valve, characterized by: switching control means (inherent in the fluid circuit connected to conduit 34) actuatable periodically to vent and re-pressurize the control fluid fed through the control port (34) to open and close the valve and generate fluid flow from the outlet as a pulsed flow" as recited.

Regarding claim 15, in Korn, "the conduit (32) is surrounded by an annular space (33) in communication with the control port (34) to provide said pressure differential across the walls of a conduit (32) as between fluid flow in the conduit (32) and fluid supplied to the annular space (33)" as recited.



Claims 11, 4, 14 and 21/14 are rejected under 35 U.S.C. §102 (b) as being anticipated by Kreeley (U. S. Pat. No. 4,300,748).

The patent to Kreeley discloses, in figure 1 for example, a “valve for controlling fluid flow comprising: a valve body (21) having an inlet (at 33) and outlet (at 34) port for fluid flow from a fluid pressure source; a substantially non-porous valve seat (32) mounted between the inlet (33) and outlet (34) ports, the substantially non-porous valve seat (32) having a flexible valve closure member (35) constrained to engage only the a substantially non-porous valve seat (32) in the closed position of the valve; a control port (39, 41) in the valve body (21) for providing a control fluid acting to maintain the flexible valve closure member (35) in the closed position under a pressure differential as between that applied to one side of the flexible closure member (35) by said fluid flow through the inlet port (33) acting to lift the flexible closure member (35) off the valve seat (32), and that applied on the other side of the flexible closure member (35) through said control port (39, 41) to close the valve; and control means (46, 48, 45, 50, control valve 56, 52, 54) for varying said differential pressure to control movements of the flexible valve closure member (35) and regulate fluid flow through the valve” as recited.

Regarding claim 4, in Kreeley, “valve seal is formed between the outer wall of a flexible conduit (35) for fluid flow between the inlet (33) and outlet (34) ports and an abutting protuberance (at 31) in a passageway for fluid flow in the valve body between the inlet (33) and outlet (34) ports” as recited.

Regarding claim 14, the patent to Kreeley discloses, in figure 1 for example, a “valve for controlling fluid flow comprising a valve body (21) having an inlet (330 and an

outlet (34) port for fluid flow from a fluid pressure source, a valve seal mounted between the inlet (33) and outlet (34) ports, the valve seal having a valve closure member (35) constrained to engage a valve seat (32) in the closed position of the valve, a control port (39, 41) in the valve body (21) for providing a control fluid acting to maintain the valve closure member (35) in the closed position under a pressure differential as between that applied to one side of the closure member (35) by said fluid flow through the inlet (33) port acting to lift the closure member off the valve seat (32), and that applied on the other side of the closure member (35) through said control port (39, 41) to close the valve, characterized by: switching control means (46, 48, 45, 50, control valve 56, 52, 54) actuatable periodically to vent and re-pressurize the control fluid fed through the control port (39, 41) to open and close the valve and generate fluid flow from the outlet (34) as a pulsed flow" as recited.

Regarding claim 21/14, in Kreeley, "a feedback valve (at 56 in general is fluidly connected) between the control port (39, 41) and the outlet (at 34) port for varying the pressure of fluid at the control port (39, 41) in response to an imbalance in pressure (such as a pressure differential sensed at ports 42, 44) at the outlet port thereby to stabilize fluid flow pressure at the outlet port" as recited.

Claims 1, 3, 12 and 13 are rejected under 35 U.S.C. §102 (b) as being anticipated by Gordon (UK Pat. No. 2 091 853 cited by applicant).

The British patent to Gordon discloses, in figure 2 for example, a "valve for controlling fluid flow in a main fluid flow path (1), comprising: a valve body (5, 6) having an inlet (identified as numeral 1 at the top for example) and outlet port (1, at the bottom)

for fluid flow from a fluid pressure source and a flexible conduit (flexible flow line 1) which extends along a greater portion of an extended length path (between the inlet and outlet), wherein the flexible tube (1) also forms a valve seal closure member constrained to engage a non-porous valve seat (ball 4) which extends along only a minor portion of the extended length of the extended length path (between the inlet and outlet) in the closed position of the valve; a control port (6) in the valve body (5, 6) for providing a control fluid acting to maintain the flexible valve seal closure member (1) in the closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible valve seal closure member (1) off the valve seat (4), and that applied on the other side of the flexible valve seal closure member (1) through said control port (6) to close the valve; and control means (inherent in the fluid circuit connected to conduit 6) for varying said differential pressure to control movements of the flexible valve closure member (1) and regulate fluid flow through the valve" as recited in claim 1.

Regarding claim 3, in Gordon, "the conduit (1) is circular in cross section and the valve seat (4) in the form of a sphere of larger cross section" as recited.

Regarding claim 12, the British patent to Gordon discloses, in figure 2 for example, a "valve for controlling fluid flow in a main fluid flow path, comprising: a valve body (generally at 5, 6) having an inlet and outlet port (both identified as numeral 1) for fluid flow from a fluid pressure source and a flexible conduit (flow line 1), wherein the flexible conduit (1) also forms a valve seal closure member (e.g. the inside diameter of flow line 1) and is the sole support structure for a valve seat element (ball 4) located

within the flexible conduit (1); a control port (6) in the valve body for providing a control fluid acting to maintain the flexible valve seal closure member (1) in a closed position under a pressure differential as between that applied to one side of the flexible closure member by said fluid flow through the inlet port acting to lift the flexible valve seal closure member (1) off the valve seat element (4), and that applied on the other side of the flexible valve seal closure member (1) through said control port (6) to close the valve; and control means (inherent in the fluid circuit connected to conduit 6) for varying said differential pressure to control movements of the flexible valve closure member (1) and regulate fluid flow through the valve" as recited.

Regarding claim 13, the British patent to Gordon discloses, in figure 2 for example, a "valve for controlling fluid flow comprising: a valve body (5, 6) having an inlet and outlet port (both identified as numeral 1) for fluid flow from a fluid pressure source; a valve seat element (ball 4) mounted between the inlet and outlet ports, the valve seat (element 4) located in a flexible conduit (1) which forms a flexible valve closure member and which is the sole support structure of the valve seat element (4); a control port (6) in the valve body (5, 6) for providing a control fluid acting to maintain the flexible valve closure member (1) in the closed position under a pressure differential as between that applied to one side of the flexible closure member (1) by said fluid flow through the inlet port acting to lift the flexible closure member (1) off the valve seat element (4), and that applied on the other side of the flexible closure member (1) through said control port (6) to close the valve; and control means (inherent in the fluid circuit connected to conduit

6) for varying said differential pressure to control movements of the flexible valve closure member (1) and regulate fluid flow through the valve' as recited.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6, 17, 18, 20, 21/15, 21/17, 21/18 and 21/20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korn (U. S. Pat. No. 2,470,744) in view of Kreeley (U. S. Pat. No. 4,300,748).

The patent to Korn discloses all the claimed features including having the "valve seal... formed between the inner wall of the flexible conduit (32) for acting as said valve closure member for fluid flow between the inlet and the outlet ports, and the valve seat (rings 46, 48) mounted within the conduit (32) to engage said inner wall of the flexible conduit (32) in the closed position of the valve (claim 18). Korn lacks having the "means for feeding the fluid flow to the inlet and control ports of the valve so that equal pressure is applied to either side of the flexible valve closure member to close the valve comprising, said control means including a restrictor valve in the flow of fluid to the control port to supply a sufficient amount of fluid adequately to pressurize the annular space in a predetermined time, and a normally closed switch actuatable to vent the

annular space and reduce pressure in the annular space whereby to open the valve" (claim 6), "the valve (being) adapted to receive fluid flow fed to the inlet and control ports of the valve so that equal pressure is applied to either side of the conduit to close the valve, and further comprising: a restrictor valve in the flow path of fluid to the control port to supply a sufficient amount of fluid adequately to pressurize the annular space in a predetermined time (claim 17), "the valve seal (being) formed between the outer wall of the flexible conduit for fluid flow between the inlet and outlet ports and an abutting protuberance in a passageway for fluid flow in the valve body between the inlet and outlet ports" (claim 20) and "a feedback valve between the control port and the outlet port for varying the pressure of fluid at the control port in response to an imbalance in pressure at the outlet port thereby to stabilize fluid flow pressure at the outlet port (claim 21)".

The patent to Kreeley discloses, in figure 1 for example, that it is known in the art to employ , in the fluid operating circuit providing pressurized fluid to and from the fluid chamber of the actuated valve 3, a "means for feeding the fluid flow to the inlet (33) and control ports (39, 41) of the valve so that equal pressure is applied to either side of (a) flexible valve closure member (35) to close the valve comprising, said control means including a restrictor valve (48) in the flow of fluid (at pipes 46, 45, 50) to the control port (39, 41) to supply a sufficient amount of fluid adequately to pressurize the (pressurized) space in a predetermined time, and a normally closed switch (valve 56) actuable to vent the (pressurized) space and reduce pressure in the (pressurized) space whereby to open the valve" (claim 6), "the valve (being) adapted to receive fluid flow fed to the inlet (33) and control ports (39, 41) of the valve so that equal pressure is applied to either side of the conduit (35) to close the valve, and further comprising: a restrictor valve (48) in the flow path of fluid (46, 45, 50) to the control port (39, 41) to supply a sufficient

amount of fluid adequately to pressurize the (pressurized) space in a predetermined time (claim 17), "the valve seal (being) formed between the outer wall of the flexible conduit (35) for fluid flow between the inlet (33) and outlet (34) ports and an abutting protuberance (at 31) in a passageway for fluid flow in the valve body between the inlet and outlet ports" (claim 20) and "a feedback valve (56) between the control port (39, 41) and the outlet port (at 34) for varying the pressure of fluid at the control port (39, 41) in response to an imbalance in pressure at the outlet port (34) thereby to stabilize fluid flow pressure at the outlet port (34, claim 21)" for the purpose of providing a valve operator that is automatic, responsive to a pressure condition at the outlet of the valve.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Korn a "means for feeding the fluid flow to the inlet and control ports of the valve so that equal pressure is applied to either side of the flexible valve closure member (32 of Korn) to close the valve comprising, said control means including a restrictor valve in the flow of fluid to the control port (34 of Korn) to supply a sufficient amount of fluid adequately to pressurize the annular space (33 of Korn) in a predetermined time, and a normally closed switch actuable to vent the annular space (33 of Korn) and reduce pressure in the annular space (33 of Korn) whereby to open the valve" (claim 6), "the valve (being) adapted to receive fluid flow fed to the inlet and control ports of the valve so that equal pressure is applied to either side of the conduit (32 of Korn) to close the valve, and further comprising: a restrictor valve in the flow path of fluid to the control port (34 of Korn) to supply a sufficient amount of fluid adequately to pressurize the annular space (33 of Korn) in a predetermined time (claim 17), "the valve seal (being) formed between the outer wall of the flexible conduit (32 of Korn) for fluid flow between the inlet and outlet ports and an abutting protuberance in a passageway for fluid flow in the valve body between the inlet and

outlet ports" (claim 20) and "a feedback valve between the control port and the outlet port for varying the pressure of fluid at the control port in response to an imbalance in pressure at the outlet port thereby to stabilize fluid flow pressure at the outlet port" for the purpose of providing a valve operator that is automatic, responsive to a pressure condition at the outlet of the valve as recognized by Kreeley.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Korn (U. S. Pat. No. 2,470,744) in view of Kreeley (U. S. Pat. No. 4,300,748) as applied to claims 6, 17, 18, 20, 21/15 and 21/17-20 above, further in view of Hirose (U. S. Pat. No. 5,136,898).

The patent to Korn, as modified by Kreeley, discloses all the claimed features with the exception of having "a fluid reservoir in communication with the control port to supplement the pressure in the annular space said switch being actuatable periodically to vent and re-pressurise the reservoir and annular space through the control port to open and close the valve and generate fluid flow from the outlet port as a pulsed flow".

The patent to Hirose discloses that it is known in the art to employ an accumulator, at reservoir 12, in the actuating fluid circuit 16 supplying actuating fluid to motor chamber 44 of a main valve, which accumulator must be pressurized prior to the main valve moving for the purpose of introducing a timing element into the actuation of the main valve so as to finely control main valve position.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Korn, as modified by Kreeley, an accumulator in the actuation circuit supplying fluid pressure to the annular space 33 of Korn, for the purpose of introducing a timing element into the actuation of the main valve 32 of Korn so as to finely control main valve position as recognized by Hirose.



Claim 16 and 21/16 are rejected under 35 U.S.C. 103(a) as being unpatentable Kreeley (U. S. Pat. No. 4,300,748) in view of Hirose (U. S. Pat. No. 5,136,898).

The patent to Kreeley discloses all the claimed features with the exception of having "a fluid reservoir in communication with the control port to supplement the pressure in the (pressurized) space said switch being actuatable periodically to vent and re-pressurize the reservoir and annular space through the control port to open and close the valve and generate fluid flow from the outlet port as a pulsed flow".

The patent to Hirose discloses that it is known in the art to employ an accumulator, at reservoir 12, in the actuating fluid circuit 16 supplying actuating fluid to motor chamber 44 of a main valve, which accumulator must be pressurized prior to the main valve moving for the purpose of introducing a timing element into the actuation of the main valve so as to finely control main valve position.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Kreeley an accumulator in the actuation circuit 46, 48, 45 supplying fluid pressure to the pressurized space inside of flexible conduit 35 of Kreeley, for the purpose of introducing a timing element into the actuation of the main valve 35 of Kreeley so as to finely control main valve position as recognized by Hirose.

Claim 19 and 21/19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korn (U. S. Pat. No. 2,470,744) in view of Kreeley (U. S. Pat. No. 4,300,748) as applied to claims 6, 17, 18, 20, 21/15 and 21/17-20 above, further in view of Gordon (U. K. Pat. No. 2 091 853 cited by applicant).

The patent to Korn, as modified by Kreeley, discloses all the claimed features including having "the conduit... circular in cross section but lacks having "the valve seat... in the form of a sphere of larger cross section".

The patent to Gordon discloses that it is known in the art to employ an internal valve seat at 4 of a "sphere of larger cross section" than the flow line 1 for the purpose of allowing the flexible flow line to collapse onto the external surface of the sphere thus forming the valve seat as well as supporting the valve seat within the flexible conduit 1.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Korn, as modified by Kreeley, a valve seat of spherical configuration larger in cross section than the diameter of the flexible conduit for the purpose of forming the valve seat as well as supporting the valve seat within the flexible conduit as recognized by Gordon.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Korn (U. S. Pat. No. 2,470,744) in view of Grimmer (U. S. Pat. No. 3,007,492).

The patent to Korn discloses all the claimed features with the exception of having "a feedback valve between the control port and the outlet port for varying the pressure of fluid at the control port in response to an imbalance in pressure at the outlet port thereby to stabilise the pressure or fluid flow at the outlet port" (claim 8), "wherein said valve is a primary valve and the feedback valve is a secondary valve with its control port being responsive to pressure variations at the outlet port of the primary valve, the inlet port of the secondary valve being connected to the control port of the primary valve and the outlet port of the secondary valve vented to atmosphere" (claim 9).

The patent to Grimmer discloses that it is known in the art to employ a "feedback valve (pilot valve 12) between the control port (shown leading to chamber 23 and supplied by line 15) and the outlet port (at 11) for varying the pressure of fluid at the control port in response to an imbalance (e.g. a sensed pressure) in pressure at the outlet port (at 11) thereby to stabilise the pressure or fluid flow at the outlet port" (claim 8), "wherein said valve (at main valve 22) is a primary valve and the feedback valve (12)

is a secondary valve with its control port (at the port 66 of figure 2) being responsive to pressure variations at the outlet port (at 11) of the primary valve, the inlet port (I<sub>A</sub>) of the secondary valve (12) being connected to the control port (from port II<sub>A</sub> of the pilot to the pressurized chamber 23 of the main valve) of the primary valve and the outlet port (at III<sub>A</sub>) of the secondary valve vented to atmosphere" (claim 9), for the purpose of controlling the main valve automatically, responsive to the outlet pressure conditions of the main valve.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Korn a "feedback valve between the control port and the outlet port for varying the pressure of fluid at the control port in response to an imbalance in pressure at the outlet port thereby to stabilise the pressure or fluid flow at the outlet port", "wherein said valve is a primary valve and the feedback valve is a secondary valve with its control port being responsive to pressure variations at the outlet port of the primary valve, the inlet port of the secondary valve being connected to the control port of the primary valve and the outlet port of the secondary valve vented to atmosphere" for the purpose of controlling the main valve automatically, responsive to the outlet pressure conditions of the main valve as recognized by Grimmer.

### ***Response to Arguments***

Regarding applicants remarks as they may apply to the above, the patents to Korn, Kreeley and Gordon each disclose contact of the flexible valve member with a "non -porous seat".

Regarding those specific comments to Kreeley and claims 6 and 7, as recited in claim 6, Kreeley discloses a "means for feeding the fluid flow to the inlet (33) and control ports (39, 41) of the valve so that equal pressure is applied to either side of (a)

flexible valve closure member (35) to close the valve comprising, said control means including a restrictor valve (48) in the flow of fluid (at pipes 46, 45, 50) to the control port (39, 41) to supply a sufficient amount of fluid adequately to pressurize the (pressurized) space in a predetermined time (when the outlet of line 45 at nozzle orifice 64 within valve 56 is closed off), and a normally closed switch (valve 56 is) actuable to vent the (pressurized) space and reduce pressure in the (pressurized) space whereby to open the valve". Regarding claim 7, Hirose has been used to meet the claim limitations.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN RIVELL whose telephone number is (571) 272-4918. The examiner can normally be reached on Mon.-Fri. from 6:00am-2:30pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on (571) 272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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